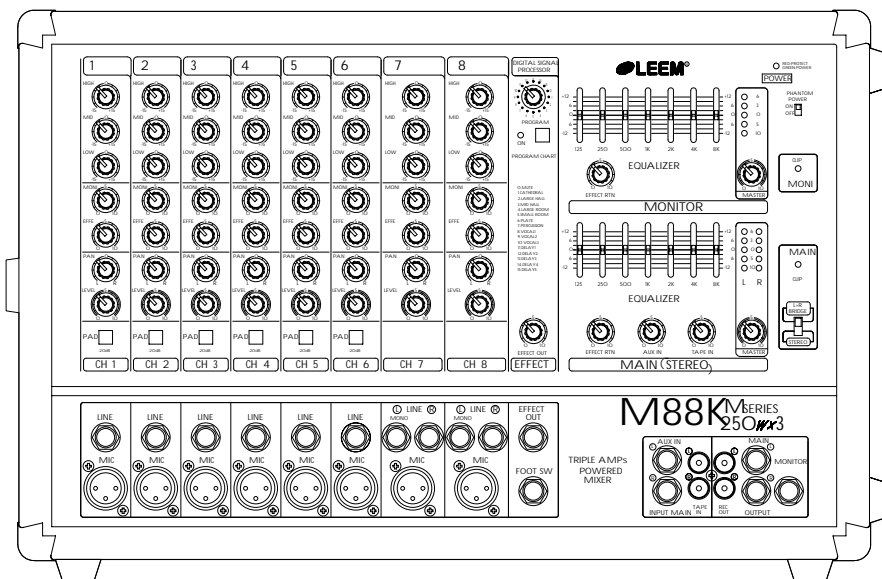


M88K

TRIPLE AMPs

POWERED MIXER



M88K

- 가 , OWNER'S MANUAL AC 가
- AC 가
- 가 ()
- 가
- *
- 20CM, 40CM, 40CM RACK-MOUNTING RACK 가
- 가
- OUTPUT SPEAKER CABLE CABLE
- TV
- 가
- .XLR connector
Pin 1: ground, pin 2:hot(+) and pin3: cold(-).

Introduction

LEEM POWERED MIXER M88K

M88K

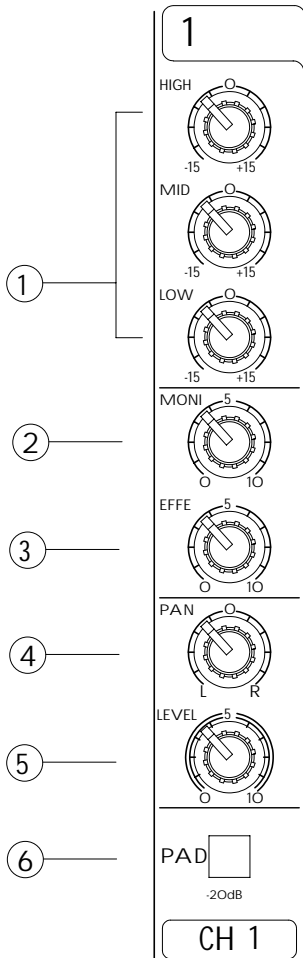
가

M88K

(Features)	(Contents)	
M88K	/	.....4
8	/	.....8
+48V	가	.....10
		.....11
		.....12
250W(RMS)		
(250W(RMS) + 250W(RMS))		.....13
= 500W(RMS)	)	.....13
		.....13
PA		.....14
.7	PA /	.....15
	PA	.....17
		.....19
		.....20
	/	.....21
EFFECT 16 Programs	Block Diagram	.....22
EFFECT		.....23
가		

(Control Panel)

(Channel Section)



control –
(EQUALIZER(HIGH, MID, LOW))

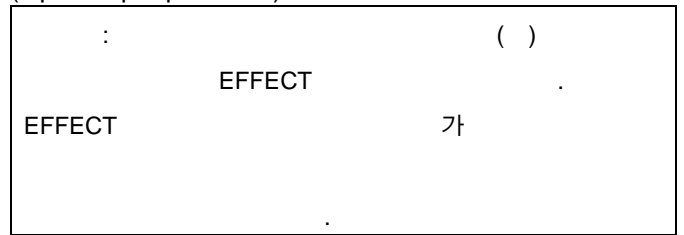
3 가
'0'
(), ,
HIGH : 10kHz ± 15dB shelving type
MID : 2.5kHz ± 15dB peaking type
LOW : 100kHz ± 15dB shelving type

Monitor controls (MONI)

MONI ()
MONI () MONITOR
()
:

Effect control (EFFECT)

EFFECT
EFFECT
EFFECT (EFFECT
EFFECT
OUT
(input/output panel)



PAN control

(BAL/PAN control for CH7-8, CH9-10)

(L/R)

7-8 9-10

Level control (LEVEL)

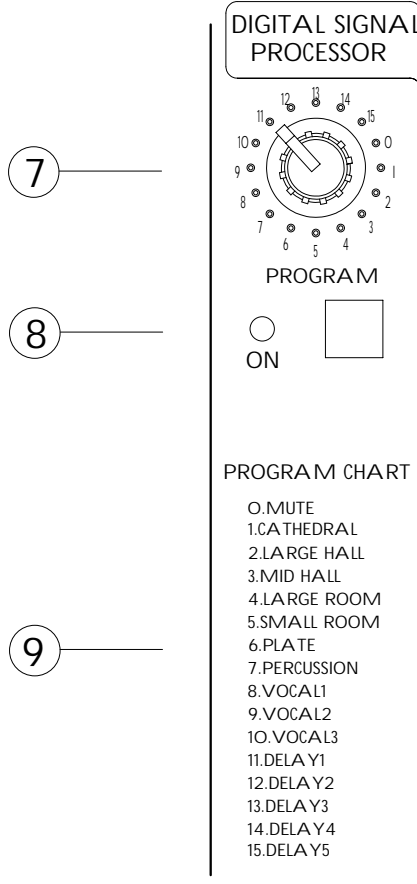
Pad switch (PAD)(1-6 ONLY)

30dB

1-6

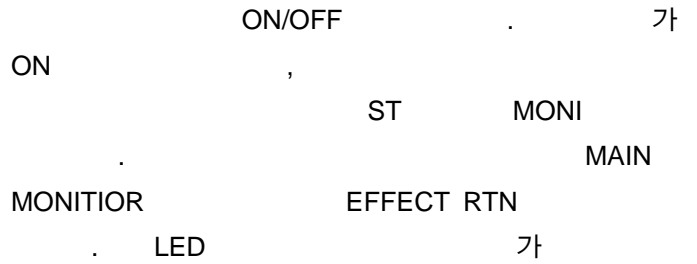
(DIGITAL EFFECT SECTION)

ON/OFF
CONTROL



Effect select switch

DIGITAL EFFECT ON switch

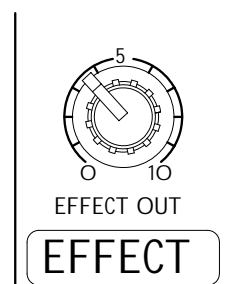


PROGRAM CHART

Program

EFFECT section

EFFECT



: EFFECT OUT

EFFECT OUT control

EFFECT OUT

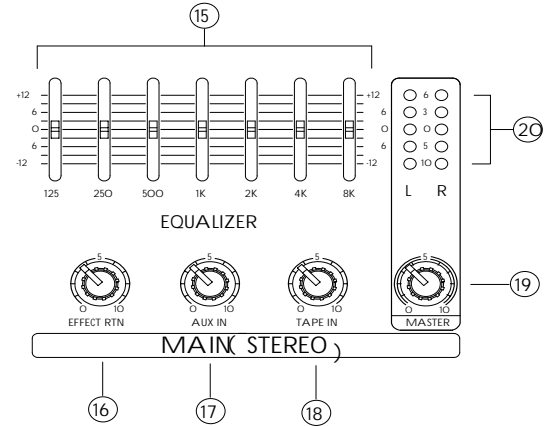
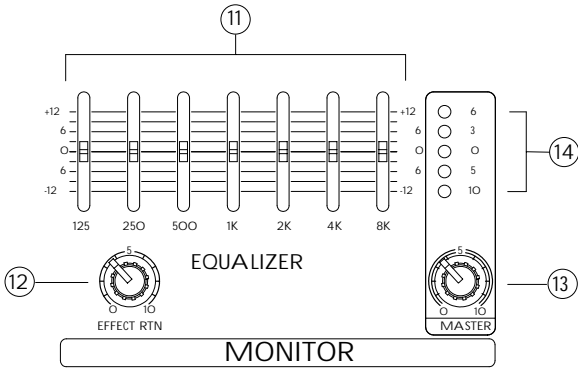
(/)

NO	PRESET	REMARK
0	MUTE	
1	CATHEDRAL	
2	LARGE HALL	
3	MID HALL	
4	LAGE ROOM	
5	SMALL ROOM	
6	PLATE	
7	PERCUSSION	
8	VOCAL1	
9	VOCAL2	
10	VOCAL3	
11	DELAY1	STEREO
12	DELAY2	STEREO
13	DELAY3	STEREO
14	DELAY4	STEREO
15	DELAY5	STEREO

MONITOR

MAIN section

MONITOR



Graphic Equalizer

15 Graphic equalizer

M88K MONI

M88K

7

7

±12dB

±12dB

가

가

(+)

가

).

MONI

16 EFFECT RTN control

MONI

MONITOR

17 AUX IN control

AUX IN

EFFECT RTN Control

MONI

18 TAPE IN

TAPE IN

MASTER control

MONI

MONITOR

19 MAIN(master) control

SPEAKERS L/R/L+R, BRIDGE

MONI

MAIN(STEREO)

Peak Level Indicator

MONITOR

20 Peak level indicator

: , '0' Indicator
MASTER control(13)

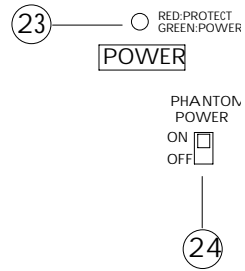
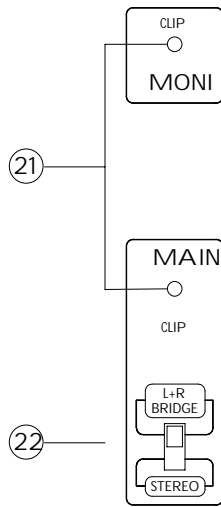
: , '0' Indicator
MASTER control(19)

POWER AMP

POWER indicator & PHANTOM switch

3

, BRIDGE



23 **POWER indicator**

RED

, GREEN

24 **PHANTOM + 48 V switch**

1~6

Lo-Z

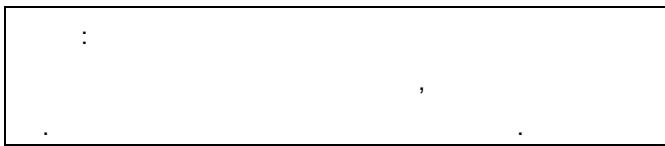
7~8

on/off

21 **LIMITER indicator**

가

가



22 **Stereo/Bridge select switch**

L/R/L+R BRIDGE

· **L+R BRIDGE**

L R

SPEAKERS L+R BRIDGE

MAIN(STEREO)

500W

(250 W+ 250 W)

· **STEREO**

MAIN

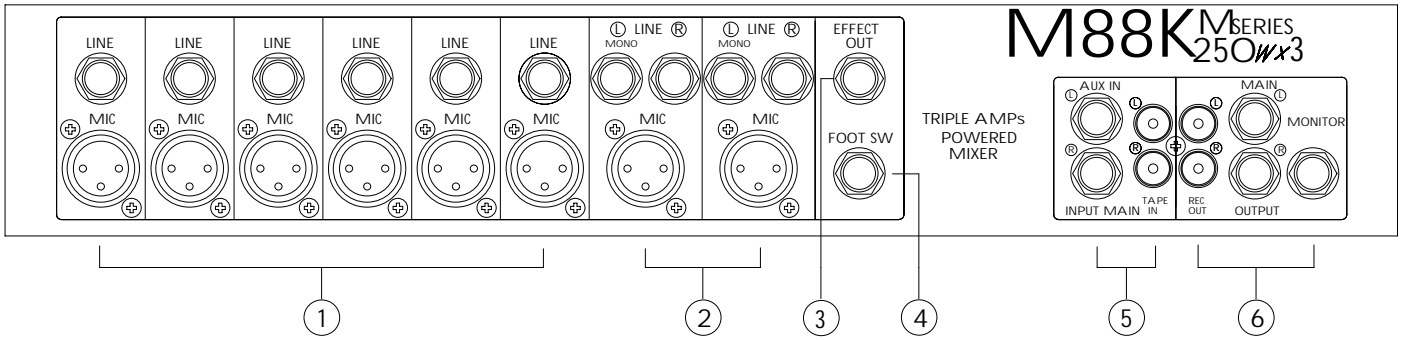
1 A/B

2

A/B

MASTER control 18

/ (Input/output panel)



(Hi-Z, Lo-Z)1-8

1~6 . PAD
()
Lo-Z +48V
Hi-Z Lo-Z , 50~600
가 600
Hi-Z -40dB ~ 10dB
, Lo-Z -50dB ~ -20dB . Hi-Z Lo-Z

Channel input Jack(Hi-Z, Lo-Z)7-8

7~8 가
LINE L(MONO)/R
LINE
L(MONO) , 50~600
, LINE , 600
-50dB , LINE
-20 dB .

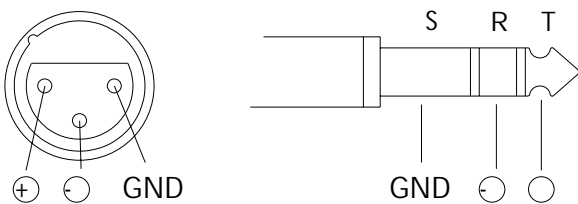
Effect Output Jack(EFFECT OUT)

Delay Echo
EFFECT
EFFECT , EFFECT OUT
+4dB/10k

Foot Switch Jack (FOOT SW)

LEEM FS-101 foot switch
ON/OFF
ON

Lo-Z jacks (XLR type)	Hi-Z jacks (TRS phone jacks)
Pin 1: ground	Sleeve: ground
Pin 2: hot(+)	Tip : hot(+)
Pin 3: cold(-)	Ring: cold(-)



Hi-Z Lo-Z
ON/OFF
가 Hi-Z
(24).가
LINE

AUX IN/TAPE IN jacks

MAIN 가

-AUX IN jacks :

가 AUX IN L/R
AUX IN L

-TAPE IN jacks :

CD

AUX IN -10dB /
600 , TAPE IN -10 dBV/600

REC OUT/MONITOR/MAIN(STEREO) jacks

M88K

MD
REC OUT ,
MONITOR MAIN(STEREO)
JACK

-REC OUT jacks :

MASTER

-MONITOR jack :

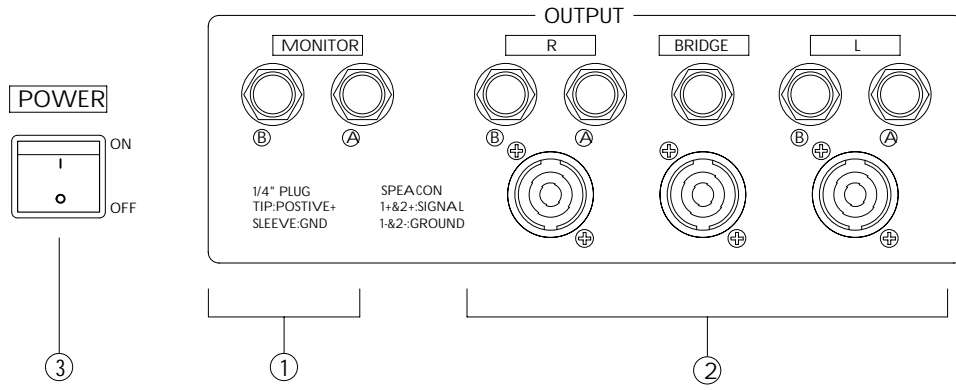
Monitor MASTER control
MONI

-MAIN(STEREO) jack :

MAIN MASTER

REC OUT JACK
-10dBv / 10k Ω , MONITOR/MAIN(STEREO)
JACK +4dB / 10 k Ω

(Rear Panel)



SPEAKERS MONITOR jacks

MONITOR

MONI

SPEAKERS MONITOR A B

4-8 가 A B
8-16 가

I/O PANEL MONITOR

SPEAKERS L/R/L+R BRIDGE jacks.

MASTER

Stereo/Bridge

When the Stereo/Bridge 가 STEREO (2-channel connection)

L/R SPEAKERS
L/R SPEAKERS L A/B
4-8
가 SPEAKER A B
SPEAKER ()
8-16 가 A
B SPEAKER L/R (4)

250W + 250W

SPEAKERS L+R
BRIDGE

Stereo/Bridge

(BRIDGE)

가 L+R BRIDGE

L/R

SPEAKERS L+R BRIDGE

8~16 가
SPEAKERS L+R BRIDGE

500W

: BRIDGE SPEAKERS
L/R

Power switch

M88K ON/OFF

: M88K ON/OFF MAIN
MASTER

(Connections)

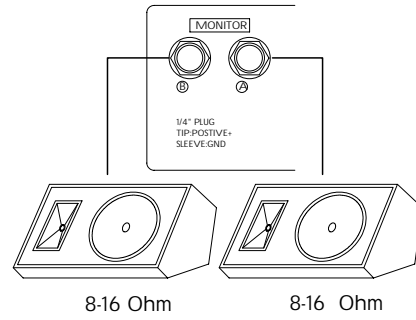
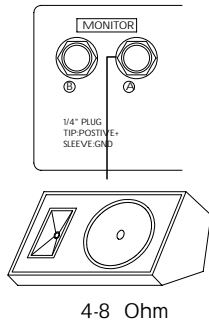
가

SPEAKER SPEAKER

Connecting monitoring speakers

MONITOR

value higher



Connecting main speakers

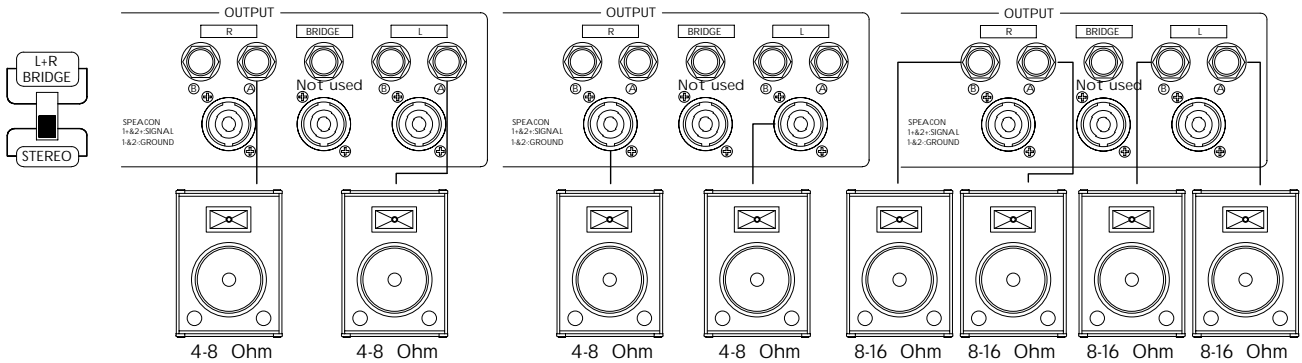
SPEAKERS L/R

BRIDGE

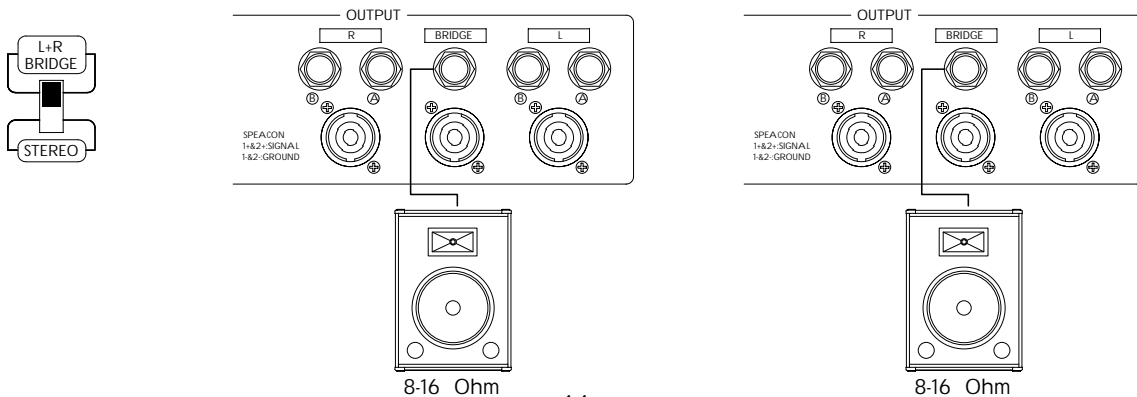
SPEAKERS L+R BRIDGE

value higher.

Two-channel connection



BRIDGE connection

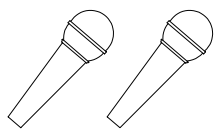
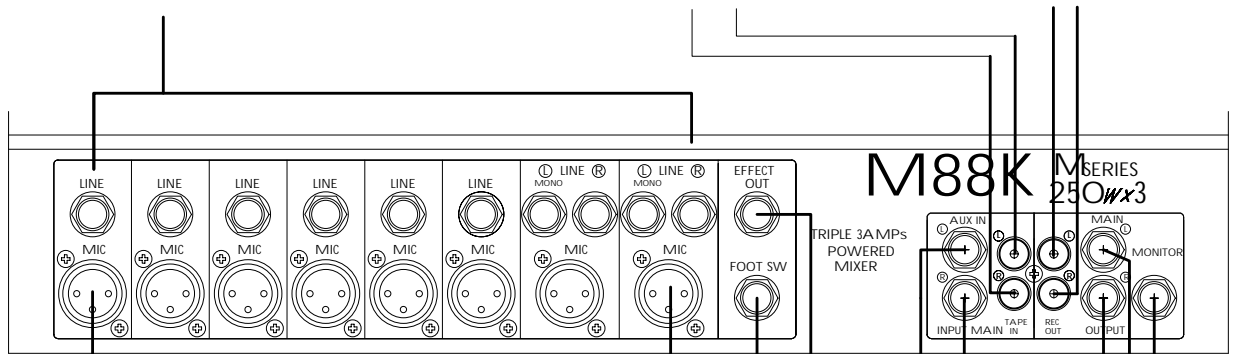
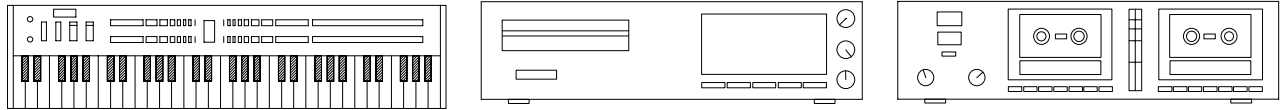


(Example Connections)

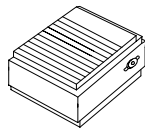
Synthesizer , Dr um Box

CD Player

Cassette Deck



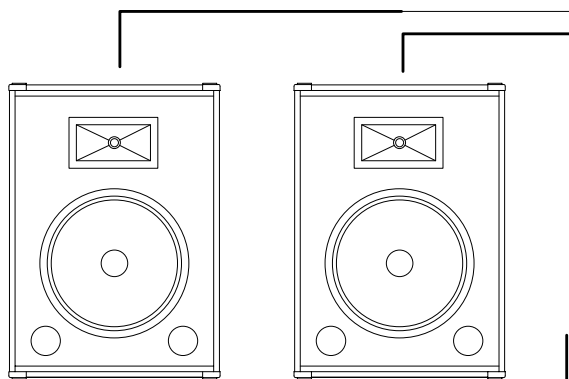
Microphone



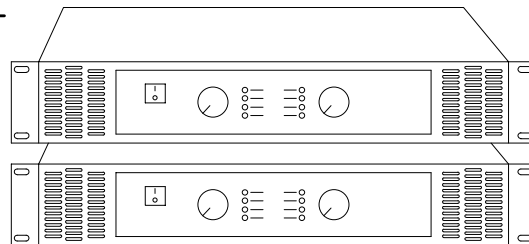
Foot switch



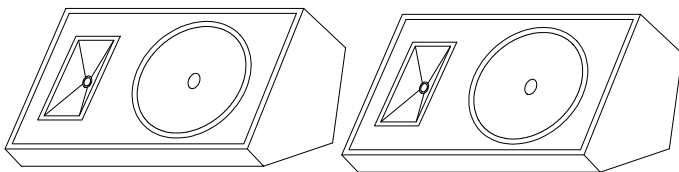
Effect Processor



main Speaker



Power AMP



Monitor Speaker

*

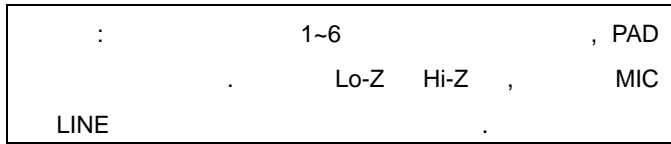
STEREO

MAIN MONITOR

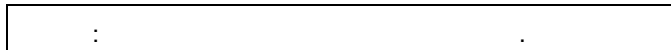
(Basic Operation)

(Connecting microphones and Instruments)

M88K MAIN MONITOR MASTER control
 MASTER
 Lo-Z/Hi-Z (1~6), MIC
 /LINE(7~8)



M88K

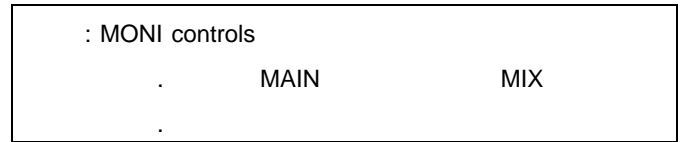


(Sending an impedant mic to the monitor speakers)

MONITOR MASTER control
 MONI control
 0 LED가

MAIN/MONITOR

MASTER control

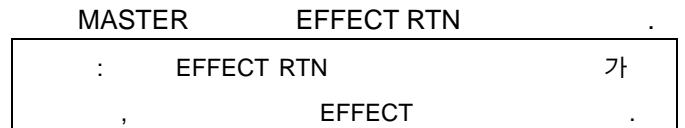


(Using the digital effect)

MAIN MASTER M88K 가
 PAN 가
 (BAL/PAN control 7~8
 LINE connector L/R
 Balance .)
 MAIN '0' LED
 ()
 LEVEL control

M88K 가
 가
 (ON/OFF)

(HIGH,LOW)



MASTER

(Digital Effect Selected Type)

PRESETS LIST FOR DSP

REVERBS

NO	PRESET (Name)	VIRTUALIZER(Equivalent)	REV TIME (ms)
0	MUTE	MUTE	0
1	CATHEDRAL	CATHEDRAL	0.5
2	LARGE HALL	CONCERT	3.0
3	MID HALL	CONCERT	1.7
4	LARGE ROOM	SMALL HALL	1.5
5	SMALL ROOM	ROOM	0.8
6	PLATE	PLATE	1.5
7	PERCUSSION	PERCUSSION	1.2
8	VOCAL1	VOCAL	3.0
9	VOCAL2	VOCAL	1.5
10	VOCAL3	VOCAL	0.9

STEREO DELAYS

NO	PRESET (Name)	VIRTUALIZER(Equivalent)	DELAY LEFT (ms)	DELAY RIGHT (ms)	FB LEFT (%)	FB RIGHT (%)
11	DELAY1	DELAY	100	250	40	20
12	DELAY1	DELAY	250	500	30	15
13	DELAY1	DELAY	300	750	30	15
14	DELAY1	DELAY	500	210	30	30
15	DELAY1	DELAY	500	310	20	20

Example setups

M88K

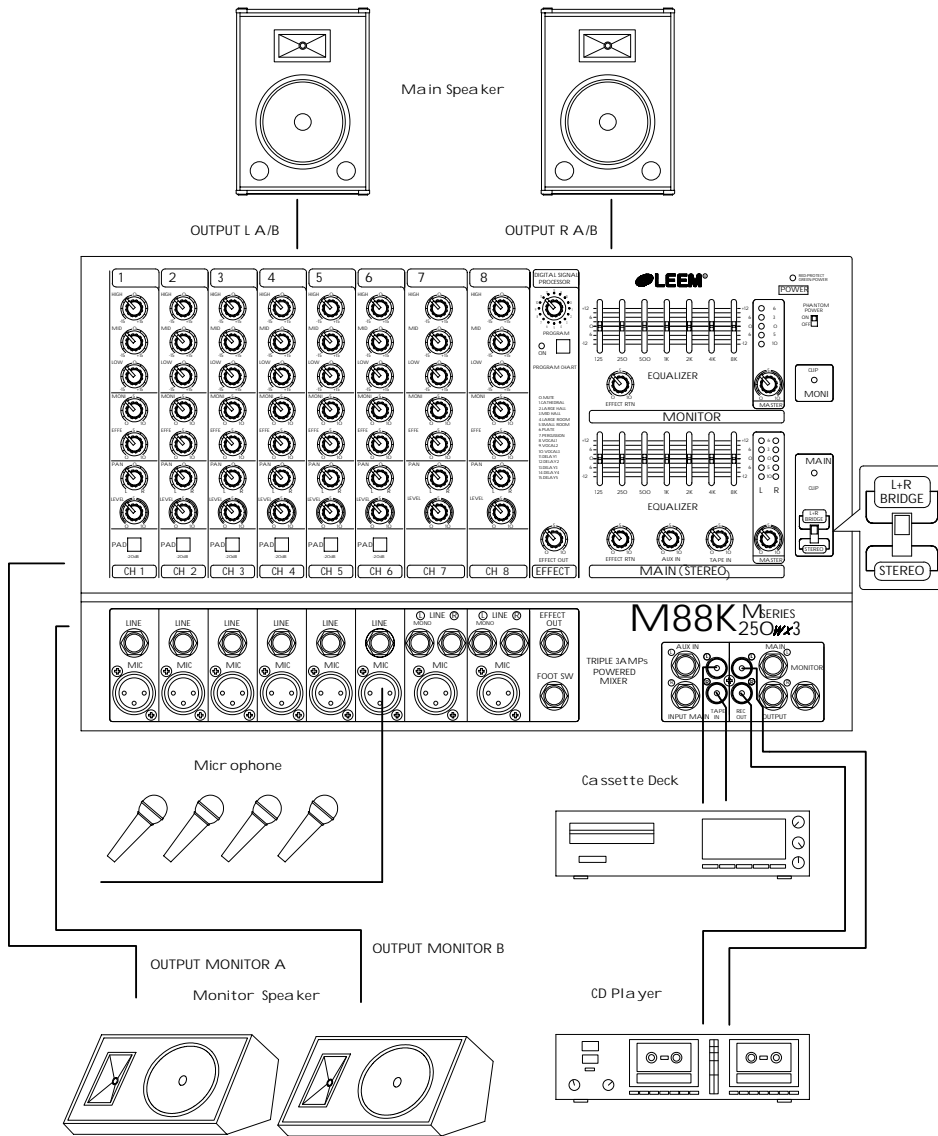
가

PA (

)(As a conference PA system/installed sound system)

M88K

PA



(Connections)

- 1~8
- CD LD PLAYER
- M88K TAPE IN

Hi-Z Lo-Z

M88K REC OUT

SPEAKERS L A/B and the
SPEAKERS R A/B
Speaker Monitor A/B

Effect RTN 가
Effect Control

Playing back a CD player

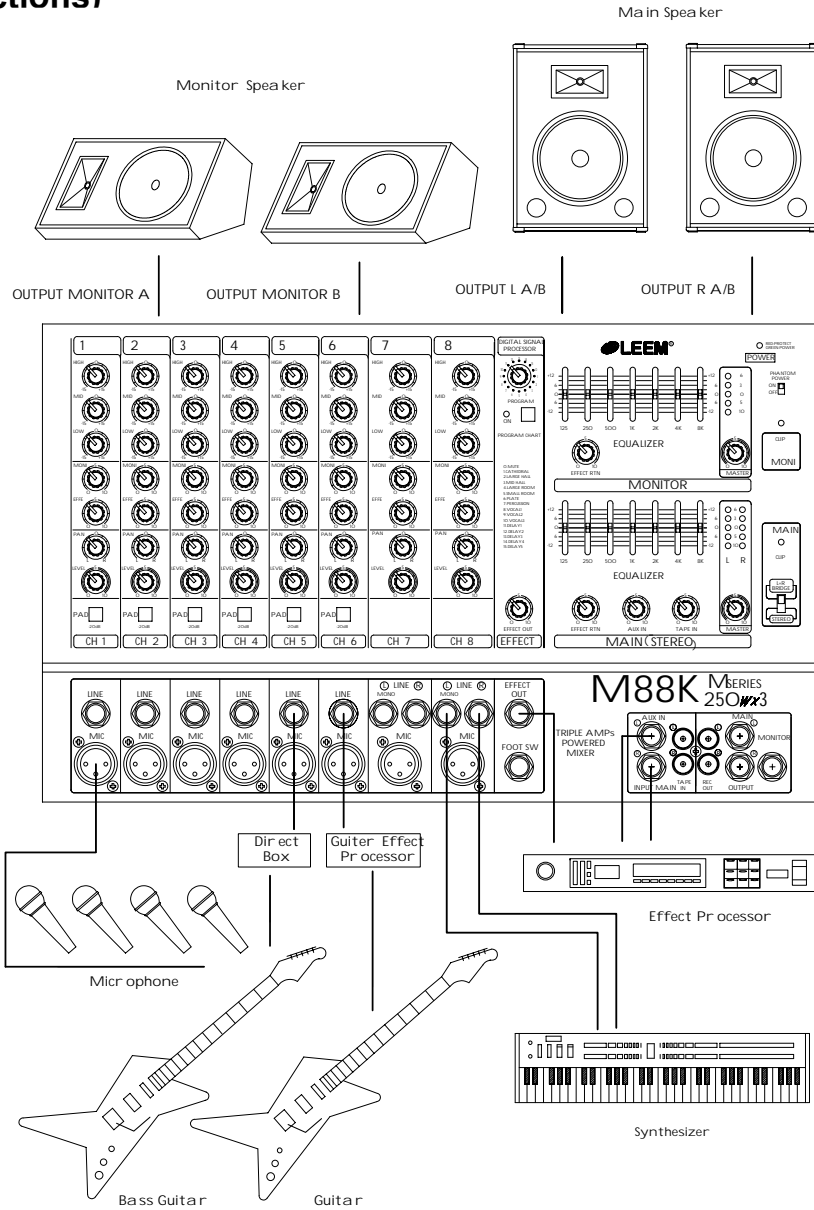
M88K .
MAIN MASTER .
CD PLAYER MAIN 0 LED
MAIN TAPE IN .

Small band PA

PA

Delay Reverb

(Connections)

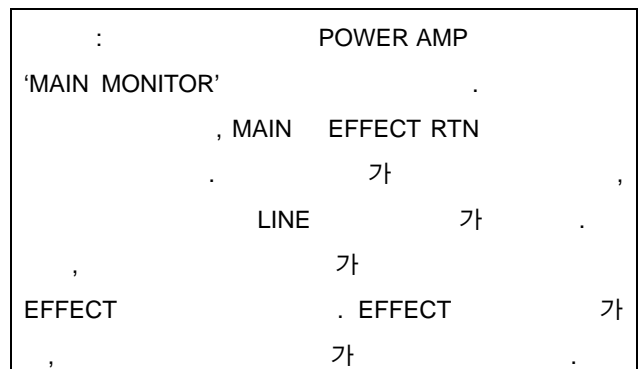


1~8

SPEAKERS L/R A/B
 SPEAKER MONITOR A/B
 SPEAKER MONITOR A/B

Delay Reverb
 M88K EFFECT OUT

M88K AUX IN



(Using an external effect)

EFFECT

EFFECT OUT

effect

가

MAIN

AUX IN

(Troubleshooting)

가

가		가	가
		가	가
		가	가 (Short)

Specifications

General Specifications

Maximum output power	MAIN STEREO : 280W+280W/8 @ 0.5% THD at 1 kHz, 425W+425W/4 @0.5% THD at 1 kHz MAIN BRIDGE : 850W/8 @0.5% THD at 1 kHz MONITOR : 280W/8 @0.5% THD at 1 kHz, 425W/4 @0.5% THD at 1 kHz		
Frequency response	20Hz-20kHz-1 dB,-3dB@1W output into 8 (POWER AMP OUT) 20Hz-20kHz-1 dB,-3dB@+4 dB output into 10kΩ(MAIN OUT,MONITOR OUT, EFFECT OUT)		
Total harmonic distortion	Less than 0.5%@20Hz-20kHz,100W output into 4 (POWER AMP OUT) Less than 0.3%@20Hz-20kHz, +14Db output into 10kΩ(MAIN OUT,MONITOR OUT, EFFECT OUT)		
Hum & noise (Average, Rs=150) (with 20 Hz-20 kHz BPF)	-125dB equivalent input noise, -68dB residual output noise(POWER AMP OUT)		
	-95dB residual output noise (MAIN OUT, MONITOR OUT, EFFECT OUT)		
	-80dB (MAIN OUT)	Master level control : nominal level, All channel level controls : minimum	
	-75dB (MONITOR OUT)	Master level control : nominal level, All channel level controls : minimum	
	-71dB (MAIN OUT)	Master level control : nominal level, 1 channel level control: nominal level	
	-84dB (EFFECT OUT)	Master level control : nominal level, All channel level controls: minimum	
Maximum voltage gain (PAD: OFF)	-64dB (EFFECT OUT)		
	Master level control : nominal level, 1channel level control: nominal level		
	86dB CHIN(Lo-Z) to POWER AMP OUT (CH1-6)		
	66dB CHIN(Lo-Z) to MAIN OUT, MONITOR OUT (CH1-6)		
	72dB CHIN(Lo-Z) to EFFECT OUT (CH1-6)		
	48dB CHIN(Lo-Z) to REC OUT (CH1-6)		
Cross talk at 1 kHz	6dB CHIN(Hi-Z) to MAIN OUT, MONITOR OUT (CH1-6)		
	26dB AUX IN to MAIN OUT		
	24dB TAPE IN to MAIN OUT		
	66dB MIC IN to MAIN OUT (CH7-8)		
	26dB LINE IN To MAIN OUT (CH7-8)		
	-65dB adjacent input, -65dB input to output		
	Input channel Equalization	± 15dB Maximum	
		HIGH	10kHz shelving
		MID	2.5kHz peaking
		LOW	100Hz shelving
	*Turn over/roll-off frequency of shelving : 3dB below maximum variable level.		
Meters	5 POINTS LED METER (MAIN OUT L/R)		
Graphic equalizer	7 bands (125, 250, 500, 1k, 2k, 4k, 8k Hz) ± 12dB Maximum(MAIN OUT, MONITOR OUT)		
Internal digital effect	16Programs(Mute. Cathedral. Hall. Room. Plate. Percussion. Vocal. Delay.)		
Phantom power	+48 V is supplied to electrically balanced inputs for powering condenser microphones via 6.8 kΩ current limiting/isolation resistors.		
Limiter	Comp : THD 0.5% (MAIN, MONITOR)		
LIMIT indicators	Turns on : THD 0.5% (MAIN, MONITOR)		
Foot switch	DIGITAL EFFECT MUTE : on/off		
Optional accessories	FS-101 Foot switch		
Power requirement	USA and Canada	120V AC 60 Hz	
	Europe	230V AC 50 Hz	
	Other	240V AC 50 Hz	
Power consumption	750 W		
Dimensions (WxHxD)	497X324X324mm		
Weight	18kg		

Input Specifications

Input connectors	PAD	Actual load impedance	Nominal impedance	Input level			Connector type
				Sensitivity	Nominal level	Max. before clipping	
CH INPUT (Lo-Z)	OFF	3k Ω	50-750 Mics	-62dB (616 μ V)	-50 dB (2.45mV)	-20dB (77.5mV)	XKR-3-31 type *2
	ON		750 Lines	-32dB (19.5mV)	-20 dB (77.5 mV)	+10dB (2.45V)	
CH INPUT(Hi-Z) (CH1-6)	OFF	10k Ω	50-750 Mics	-52dB (1.95mV)	-40dB (7.75mV)	-10dB (245mV)	Phone jack (TRS)*2
	ON		750 Lines	-22dB (61.6mV)	-10dB (245mV)	+20dB (7.75V)	
MIC INPUT (CH7,8)		3k Ω	50-750 Mics	-62dB (616 μ V)	-50dB (2.45mV)	-20dB (77.5mV)	XLR-3-31 type*2
LINE INPUT (CH7,8)(L,R)		10k Ω	750 Line	-22dB (61.6 mV)	-10dB (245mV)	+20dB (7.75V)	Phone jack *3
TAPE IN (L, R)		10k Ω	750 Line	-22dBV (79.4mV)	-10dB (316mV)	+17.8dBV (7V)	Phono jack
AUX IN (L,R)		10k Ω	750 Line	-22dB (61.6mV)	-10dB (245mV)	+20dB (7.75V)	Phone jack *3

* 1. Sensitivity is the lowest level that can produce an output of +4dB(1.23V) or the nominal output level when the unit is set at maximum gain.(All level controls are at maximum position.)

* 2. Balanced.

* 3. Unbalanced.

-0 dB=0.775 Vrms, 0 dBV=1 Vrms.

Output Specifications

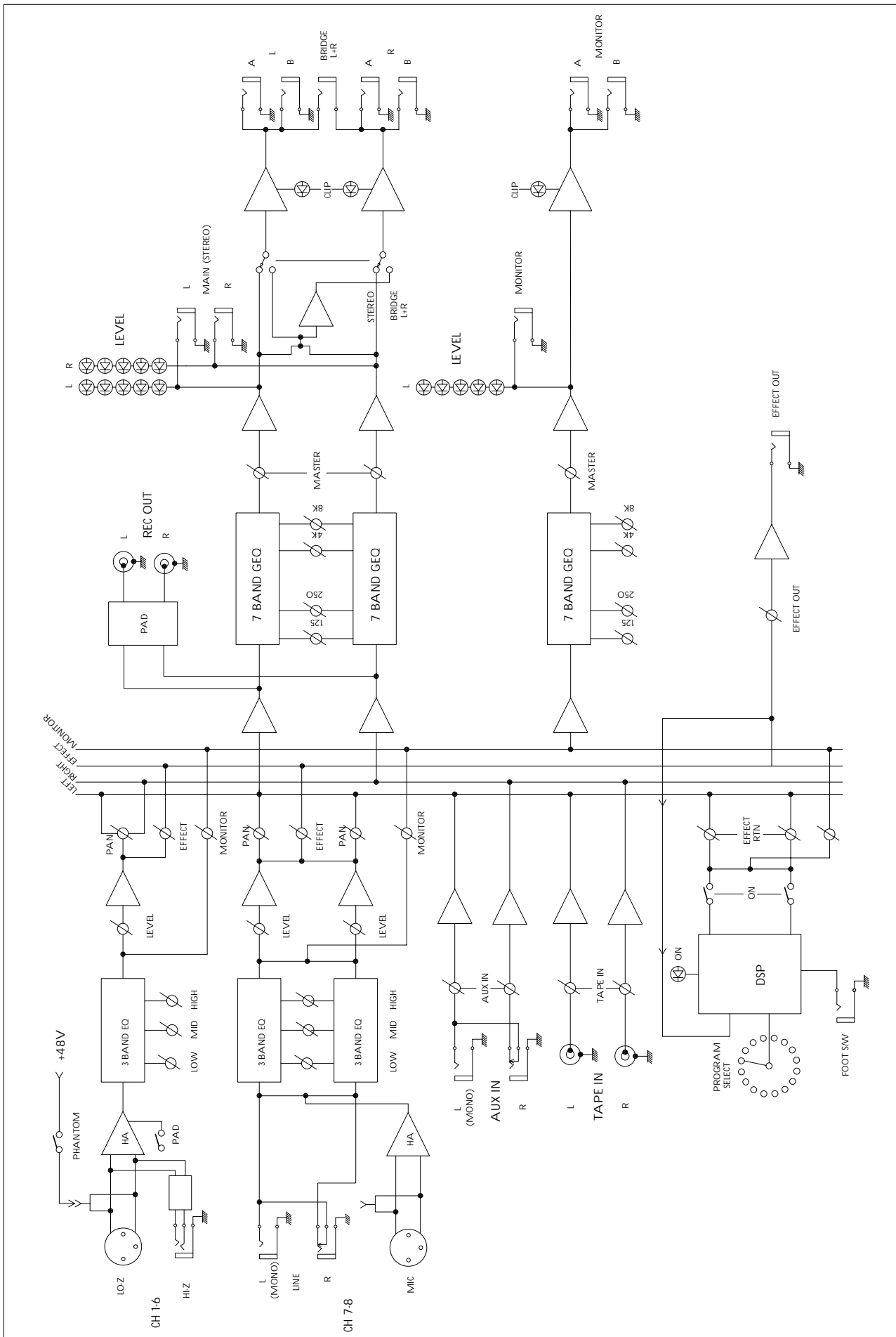
Output Connectors	Actual source impedance	Nominal impedance	Output level		Connector type
			Nominal	Max. before clipping	
MAIN AMP OUT (L, R)(A, B)	0.1	4/8 Speaker	200 W/4	(425W/4)	Phone & Speacon
MAIN BTL OUT	0.1	8 Speaker	400 W/8	(825W/8)	Phone & Speacon
MONITOR AMP OUT (A, B)	0.1	8 Speaker	200 W/4	(425W/4)	Phone & Speacon
MAIN OUT(L, R)	750	10k Ω Lines	+4dB(1.23V)	+20 dB(7.75V)	Phone jack
MONITOR OUT	750	10k Ω Lines	+4dB(1.23V)	+20 dB(7.75V)	Phone jack
EFFECT OUT	750	10k Ω Lines	+4dB(1.23V)	+20 dB(7.75V)	Phone jack
REC OUT(1,2)	750	10k Ω Lines	-10 dBV(316mV)	+10 dBV(3.16V)	Phone jack

.All output jacks are unbalanced.

.0 dB=0.775 Vrms, 0 dBV = 1 Vrms.

Specifications are subject to change without prior notice.

Block Diagram





	POWERED MIXER		M88K
			HD09012-2002A
			032-816-7100~6
		688-14	2 118B-6L
			2
		8	

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

1.

(080-316-7100)

2.

3.

			, ()	

1.

- 2.
- (1)
- (2)

-
-
-
-
-

*

(+)



● ●

688-14 2 118B-6L

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FAX : (032) 816-7108~9

E-mail : leem@leem.co.kr

Homepage : www.leem.co.kr

● ●

가 3 1487 가 805-2

TEL : (080) 316-7100